1   1.   A method of providing multiple program identifier (PID) information for a

2   multiple carriage content delivery system, comprising:

3   constructing a program association table (PAT) that associates programs

4   with primary PIDs;

5   constructing a plurality of program map tables (PMT), one for each program

6   in the PAT;

7   constructing a lookup table that maps at least one primary PID to at least

8   one shadow PID; and

9   broadcasting the PAT, the PMTs and the lookup table over the content

10   delivery medium.

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12   2.   The method according to claim 1, wherein the lookup table is broadcast as

13   one or more MPEG user private data packets.

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15   3.   The method according to claim 1, carried out at a cable television system

16   headend.

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1 4. A method of demultiplexing a data stream having multiple program
2 identifiers for a program, comprising:
3   receiving a program association table (PAT) that associates programs with
4 primary PIDs;
5   receiving a program map table (PMT);
6   receiving a lookup table relating primary PIDs to shadow PIDs;
7   determining, from the PMT and the lookup table that a program is associated
8 with both a primary PID and a shadow PID; and
9   setting a PID filter to permit passage of packets having both primary and
10 shadow PIDs.

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12 5. The method according to claim 4, further comprising establishing a
13 demultiplexer output path for both the primary PID and the shadow PID.

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15 6. The method according to claim 4, wherein the lookup table contains a
16 shadow PID for a shadow entitlement control message (ECM), and further
17 comprising initializing a decrypter using the shadow ECM.

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19 7. The method according to claim 4, carried out in a television set-top box.

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8.   A method of constructing a stream of data packets having primary and shadow packet identifiers (PIDs), the packets having headers and payloads, comprising:

receiving an incoming data stream having packets with the primary and shadow PIDs;

providing a stream of packets having the primary PID to a first buffer;

detecting a packet having the shadow PID and a shadow payload in the incoming data stream;

switching the stream of packets having the primary PID to a second buffer in response to the detecting; and

searching a last packet stored in the first buffer for a packet corresponding to the packet having the shadow PID.

9.   The method according to claim 8, further comprising generating an interrupt as a result of detecting the packet having the shadow PID.

10.   The method according to claim 9, wherein the switching is carried out in response to the interrupt.

11.   The method according to claim 8, further comprising generating a packet having the primary PID and the shadow payload.

12.   The method according to claim 11, wherein the generating comprises substituting the primary PID for the shadow PID into the packet having the shadow PID.

13.   The method according to claim 11, wherein the generating comprises substituting the shadow payload into the matching packet.

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14.   The method according to claim 8, wherein the corresponding packets have

2   the matching sequence number.

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15.   The method according to claim 8, wherein the corresponding packets are

5   encrypted under two different encryption techniques.

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16.   A storage medium storing instructions which, when executed on a

8   programmed processor, carry out a process according to claim 8.

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17. A method of constructing a stream of data packets having primary and shadow packet identifiers (PIDs), the packets having headers and payloads, comprising:

receiving an incoming data stream having packets with the primary and shadow PIDs;

providing a stream of packets having the primary PID to a first buffer;

detecting a packet having the shadow PID and a shadow payload in the incoming data stream;

switching the stream of packets having the primary PID to a second buffer in response to the detecting; and

searching a first packet stored in the second buffer for a packet corresponding to the packet having the shadow PID.

18. The method according to claim 17, further comprising generating an interrupt as a result of detecting the packet having the shadow PID.

19. The method according to claim 18, wherein the switching is carried out in response to the interrupt.

20. The method according to claim 17, further comprising generating a packet having the primary PID and the shadow payload.

21. The method according to claim 20, wherein the generating comprises substituting the primary PID for the shadow PID into the packet having the shadow PID.

22. The method according to claim 20, wherein the generating comprises substituting the shadow payload into the matching packet.

1   23.   The method according to claim 17, wherein the corresponding packets have

2   the matching sequence number.

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4   24.   The method according to claim 17, wherein the corresponding packets are

5   encrypted under two different encryption techniques.

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7   25.   An electronic storage medium storing instructions which, when executed on

8   a programmed processor, carry out a process according to claim 17.

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26. A method of constructing a stream of data packets having primary and shadow packet identifiers (PIDs), the packets having headers and payloads, comprising:

receiving an incoming data stream having packets with the primary and shadow PIDs;

providing a stream of packets having the primary PID to a first buffer;

detecting a packet having the shadow PID and a shadow payload in the incoming data stream;

switching the stream of packets having the primary PID to a second buffer in response to the detecting; and

searching a first packet stored in the second buffer and a last packet stored in the first buffer for a packet corresponding to the packet having the shadow PID.

27. The method according to claim 26, further comprising generating an interrupt as a result of detecting the packet having the shadow PID.

28. The method according to claim 27, wherein the switching is carried out in response to the interrupt.

29. The method according to claim 26, further comprising generating a packet having the primary PID and the shadow payload.

30. The method according to claim 29, wherein the generating comprises substituting the primary PID for the shadow PID into the packet having the shadow PID.

31. The method according to claim 29, wherein the generating comprises substituting the shadow payload into the matching packet.

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32.   The method according to claim 26, wherein the corresponding packets have the matching sequence number.

33.   The method according to claim 26, wherein the corresponding packets are encrypted under two different encryption techniques.

34.   An electronic storage medium storing instructions which, when executed on a programmed processor, carry out a process according to claim 26.

35.   A method of constructing a stream of data packets having primary and shadow packet identifiers (PIDs), the packets having headers and payloads, comprising:

receiving an incoming data stream having packets with the primary and shadow PIDs;

providing a stream of packets having the primary PID to a first buffer;

detecting a packet having the shadow PID and a shadow payload in the incoming data stream;

switching the stream of packets having the primary PID to a second buffer in response to the detecting;

determining a memory address for a storage location in the first buffer at a time of the detecting; and

searching for a packet stored at approximately the memory address in the first buffer for a packet corresponding to the packet having the shadow PID.

36.   The method according to claim 35, further comprising generating an interrupt as a result of detecting the packet having the shadow PID.

37.   The method according to claim 36, wherein the determining is carried out in response to the interrupt and wherein the determining comprises storing contents of a DMA register to note temporal location for packets.

38.   The method according to claim 35, further comprising generating a packet having the primary PID and the shadow payload.

39.   The method according to claim 38, wherein the generating comprises substituting the primary PID for the shadow PID into the packet having the shadow PID.

1   40.   The method according to claim 38, wherein the generating comprises

2   substituting the shadow payload into the matching packet.

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4   41.   The method according to claim 35, wherein the corresponding packets have

5   the matching sequence number.

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7   42.   The method according to claim 35, wherein the corresponding packets are

8   encrypted under two different encryption techniques.

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10   43.   An electronic storage medium storing instructions which, when executed on

11   a programmed processor, carry out a process according to claim 35.

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44. A digital television receiver apparatus that reconstitutes/reconstructs a stream of data packets having primary and shadow packet identifiers (PIDs), the packets having headers and payloads, the receiver comprising:

a micro computer;

a first primary packet buffer;

a second primary packet buffer;

a demultiplexer receiving an incoming data stream having packets with the primary and shadow PIDs and providing a stream of packets having the primary PID to one of the toggled primary packet buffers;

means for detecting a packet having the shadow PID and a shadow payload in the incoming data stream;

an interrupt handler that generates an interrupt as a result of detecting the packet having the shadow PID;

means for toggling the stream of packets having the primary PID to the other of the first and second primary packet buffers in response to the interrupt; and

program means running on the microcomputer for identifying a location of a packet adjacent the detected packet at least one of the first and second primary packet buffers.

45. The apparatus according to claim 44, further comprising program means running on the micro computer for generating a packet having the primary PID and the shadow payload.

46. The apparatus according to claim 45, wherein the generating comprises substituting the primary PID for the shadow PID into the packet having the shadow PID.

47. The apparatus according to claim 45, wherein the generating comprises substituting the shadow payload into the matching packet.

48.   The apparatus according to claim 44 wherein the corresponding packets have the matching sequence number.

49.   The apparatus according to claim 44, wherein the corresponding packets are encrypted under two different encryption techniques.

50.   The apparatus according to claim 44, wherein the program means comprises means for reading a DMA register.

51.   The apparatus according to claim 44, wherein the digital television receiver device comprises a television set-top box.